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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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EXAMINER

PERRY, ANTHONY T

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 06/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/988,688

Applicant(s)

HORI, TSUNENOBU

Examiner

Anthony T Perry

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim 14 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 6.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: L, W and t of drawings 2 and 14. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. Figure 14 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 8 is objected to because of the following informalities: there are two periods at the end of claim 8. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 1-2, 6 and 8-9 rejected under 35 U.S.C. 102(b) as being anticipated by Pfeil (US 2,406,966).

Regarding claim 1, Fig. 4 of the Pfeil reference shows a spark plug comprising a metal shell 10, a center electrode 5 retained in the metal shell and insulated from the metal shell, and a ground electrode 8 opposed to the center electrode. The ground electrode is welded at an end thereof directly to the metal shell. The Examiner notes that the claim limitation that "by one of laser welding and arc welding" is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113). Therefore, it is the position of the examiner that it would have been obvious to one of ordinary skill in the art that the spark plug disclosed by Pfeil is at least a fully functional equivalent to the Applicant's claimed invention as evidenced by Pfeil's suggestion of all of the Applicant's claimed structural limitations.

Regarding claims 2 and 6, Pfeil teaches that electrodes are commonly made of a platinum-iridium alloy having 80% platinum and 20% iridium (col. 1, lines 3-7).

Regarding claim 8, Pfeil teaches a spark plug comprising a metal shell 10, a center electrode 5 retained in the metal shell and insulated from the metal shell, and a ground electrode 8 opposed to the center electrode. The ground electrode is welded at an end thereof directly to the metal shell. Pfeil further teaches that electrodes are commonly made of an iridium-platinum alloy (col. 1, lines 3-7).

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Regarding claim 9, the Examiner notes that the claim limitation that "joined to said metal by laser welding" is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113). Therefore, it is the position of the examiner that it would have been obvious to one of ordinary skill in the art that the spark plug disclosed by Pfeil is at least a fully functional equivalent to the Applicant's claimed invention as evidenced by Pfeil's suggestion of all of the Applicant's claimed structural limitations.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeil (US 2,406,966).

Regarding claims 3 and 10, Pfeil discloses the claimed invention except for the limitation of of the welding depth range of the ground electrode and the metal shell. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. It would have been obvious to one having

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ordinary skill in the art at the time the invention was made to provide a workable range for the welding depth, since optimization of workable ranges is considered within the skill of the art.

Claims 4, 5, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeil (US 2,406,966) as applied to claims 1 and 8 above, and further in view of Takafumi et al. (JP 63-266046).

Regarding claims 4-5 and 11-12, Pfeil fails to specifically teach the composition of the metal shell. However, Takafumi teaches a composition of a metal shell for a spark plug that is made of an Fe-based alloy containing 0.15% by weight or less of S, 0.35% by weight or less of Si, 0.25% by weight or less of C, 1.5% by weight or less of Mn, and 0.1% by weight or less of P (see abstract). This composition provides a metal shell with excellent tensile strength (see abstract). Accordingly one of ordinary skill in the art at the time the invention was made would have found it obvious to have the metal shell with the above composition, as taught by Takafumi, so as to provide a metal shell with excellent tensile strength.

Claims 2, 6, 7, 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeil (US 2,406,966) as applied to claims 1 and 8 above, and further in view of Middleton (US 2,476,208)

Regarding claims 2, 6 and 7, Middleton teaches the use of alloys for ground electrodes made of at least 50% of at least one precious metal including platinum or iridium and an additive of Pd (col. 3, lines 38-52). The alloys provide an improved electrode that is substantially impervious to the penetration of lead compounds that are present in aviation fuels (col. 1, lines 29-40). Accordingly, one of ordinary skill in the art would have found it obvious to use an alloy made of at least 50% of at least one precious metal including platinum or iridium and an additive

of Pd for the ground electrode since such alloys provide an improved electrode that is substantially impervious to the penetration of lead compounds that are present in aviation fuels.

Regarding claims 8 and 13, Pfeil teaches a spark plug comprising a metal shell 10, a center electrode 5 retained in the metal shell and insulated from the metal shell, and a ground electrode 8 opposed to the center electrode. The ground electrode is welded at an end thereof directly to the metal shell. Pfeil does not specifically teach the use of an alloy as the ground electrode having at least 50% iridium. However, Middleton teaches the use of alloys for ground electrodes made of at least 50% of at least one precious metal including platinum or iridium and an additive of Pd (col. 3, lines 38-52). The alloys provide an improved electrode that is substantially impervious to the penetration of lead compounds that are present in aviation fuels (col. 1, lines 29-40). Accordingly, one of ordinary skill in the art would have found it obvious to use an alloy made of at least 50% of at least one precious metal including platinum or iridium and an additive of Pd for the ground electrode since such alloys provide an improved electrode that is substantially impervious to the penetration of lead compounds that are present in aviation fuels.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Kanao (US 6,307,307); Franks (US 3,958,144); and McDougal (US 2,783,409); Hensel (US 2,391,455); and Hopps (US 2,239,561).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Anthony Perry* whose telephone number is (703) 305-1799. The

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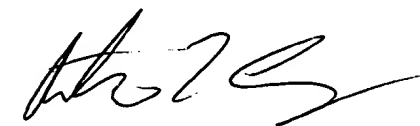
examiner can normally be reached between the hours of 9:00AM to 5:30PM Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (703) 305-4794. The fax phone number for this Group is (703) 308-7382.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [Anthony.perry@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Anthony Perry
Patent Examiner
Art Unit 2879
May 30, 2003



VIP PATEL
PRIMARY EXAMINER